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# A New Hybrid Bromeliad from Southernmost Brazil, *Tillandsia* × *baptistana*

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**ABSTRACT.** A new putative natural hybrid bromeliad from southernmost Brazil, *Tillandsia* × *baptistana* Gonçalves & Azevêdo-Gonçalves (Bromeliaceae), is here described. Its habit is very similar to *T. mallemonitii* Glaziou ex Mez, but the floral characteristics are intermediate between the probable parental taxa (*T. recurvata* (L.) L. and *T. mallemonitii*). A key to identify this hybrid and its parents on the basis of the floral characters is also presented.

**RESUMO.** Uma nova bromélia, provável híbrida natural, *Tillandsia* × *baptistana* Gonçalves & Azevêdo-Gonçalves (Bromeliaceae), é aqui descrita. Seu hábito é muito similar ao de *T. mallemonitii* Glaziou ex Mez, enquanto suas características florais são intermediárias entre os táxons parentais (*T. recurvata* (L.) L. e *T. mallemonitii*). Uma chave para identificar este híbrido e seus parentais, com base em caracteres florais, também é apresentada.

*Key words:* Brazil, Bromeliaceae, *Tillandsia*.

The genus *Tillandsia* L. has nearly 420 species and is widely distributed in the Neotropics (Smith & Downs, 1977; Winkler, 1982). However, few hybrids are known in the genus. During fieldwork in which we studied vascular epiphytes on the coastal plain of Rio Grande do Sul, the southernmost Brazilian state (Gonçalves & Waechter, 2002), we found a little *Tillandsia* that was further recognized as a previously unknown putative hybrid. We describe it herein, as follows:

***Tillandsia* × *baptistana*** Gonçalves & Azevêdo-Gonçalves, nothosp. nov. [= *Tillandsia mallemonitii* Glaziou ex Mez × *T. recurvata* (L.) L.].  
TYPE: Brazil. Rio Grande do Sul: Terra de Areia, epiphyte on a fallen branch near peat forest, 15 Dec. 1999 (fl., fr.), C. N. Gonçalves & C. F. de Azevêdo-Gonçalves 244 (holotype, ICN 120.704; isotype, HAS). Figure 1.

Haec nothospecies inter *Tillandsiam mallemonitii* Glaziou ex Mez et *T. recurvata* (L.) L. hybrida putata est; a hac floribus (et plerumque statura) majoribus atque petalis remiformibus, ab illa petalis brevioribus pallide azureis atque antheris ovarioque brevioribus distinguuntur.

Epiphytic herb 16–20 cm, grayish. Roots present. Stem, leaves, inflorescence, and bracts covered by radial scales. Stem 4–6 cm, dichotomous from its base to its apex, turned near the roots and covered by leaf bases. Leaves 3–9 cm, lanceolate, without petioles, densely covered by scales in both faces. Terminal inflorescences 7–10 cm, with a thin rachis, and 1 bract per flower 14–19 mm. Flowers semisessile, trimerous, commonly as pairs open at same time, or a bud and one flower open. Sepals suboblong to lanceolate, 10.4–12 mm, glabrous. Petals pale blue, 14.8–15.3 mm, with 11 laminar nerves, blade oar-shaped, suborbicular with suboblique apex, spreading at anthesis. Stamens 4.1–6.8 mm, exceeding the pistil; anthers 1.1–2.1 mm. Ovary cylindrical, 3.8–4.1 mm, with a short thick pistil 1–1.3 mm. Fruit capsular with 3 valves. Seeds absent or imperfectly developed.

*Etymology.* This taxon is named in honor of Luís Rios de Moura Baptista, an eminent botanist from Rio Grande do Sul.

*Habitat and distribution.* *Tillandsia* × *baptistana* is epiphytic on fig trees (*Ficus organensis* (Miquel) Miquel) near peat forest. To date, *T. ×baptistana* has been found only near the town of Terra de Areia (29°35'S, 50°06'W) in the coastal plain of Rio Grande do Sul, Brazil, where it is extremely rare (only three individuals found). However, it is to be expected wherever *T. recurvata* and *T. mallemonitii* occur sympatrically, but it may be overlooked if not collected with flowers. In Rio Grande do Sul, 19 native species of *Tillandsia* were listed, but none of these was a natural hybrid (Winkler, 1980, 1982; Strehl, 2000). Therefore, *T. ×baptistana* is the first natural hybrid of *Tillandsia* found in this Brazilian state.



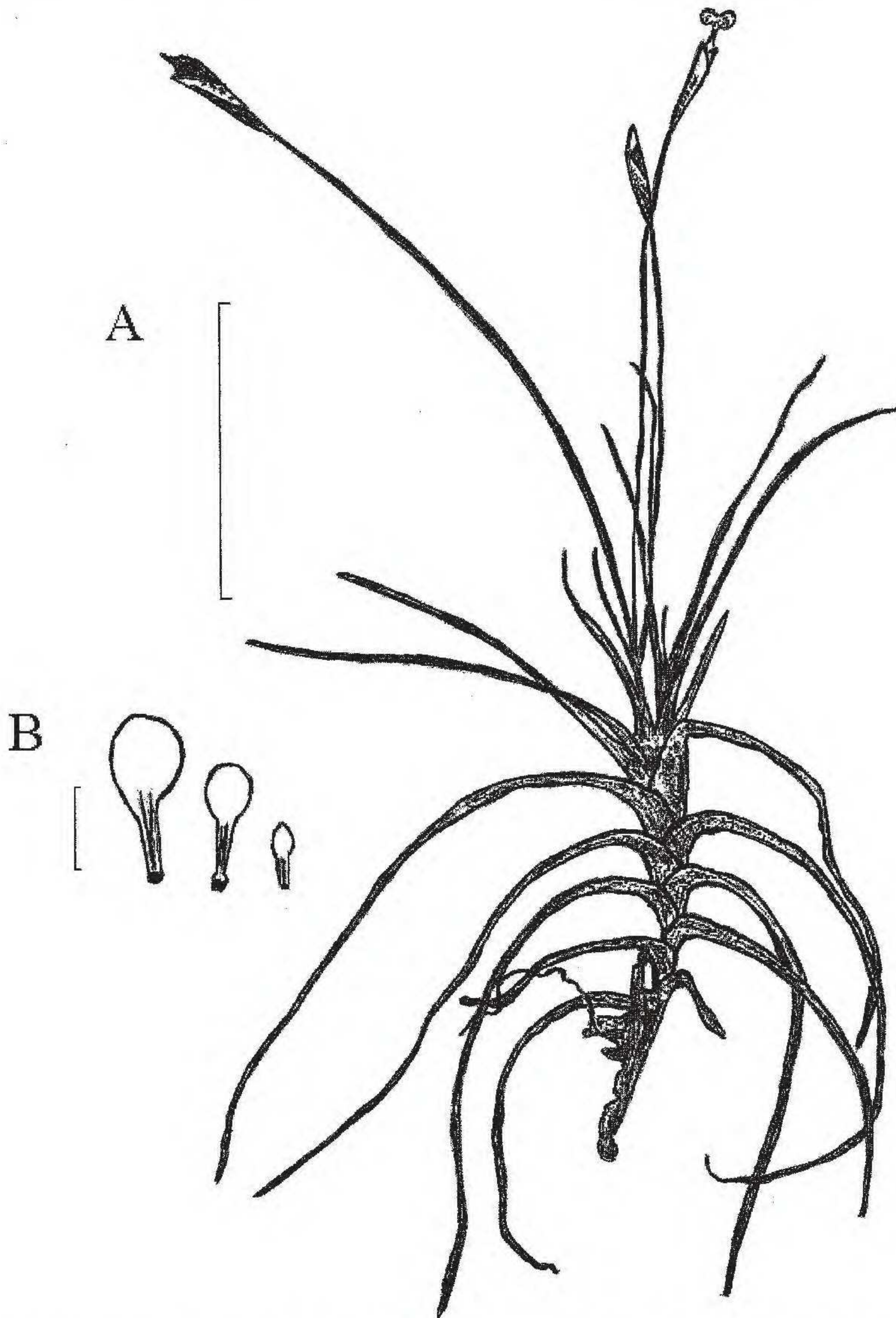


Figure 1. *Tillandsia*  $\times$  *baptistana* Gonçalves & Azevêdo-Gonçalves. —A. Habit. —B. Petals from *T. mallemonitii* (left), *T. \times* *baptistana* (center), and *T. recurvata* (right). Scale bars: A = 5 cm, B = 1 cm. Drawn from the holotype, C. N. Gonçalves & C. F. de Azevêdo-Gonçalves 244 (ICN).

*Discussion.* According to Smith and Downs (1977), hybrids of *Tillandsia* are relatively rare. They listed only 10 hybrid taxa of *Tillandsia* in their revision of Tillandsioideae. Few other hybrids have been described since then (Gardner, 1984; Luther, 1985), and some previously described species have been recognized as having a hybrid origin (Luther, 1989). However, Luther (1989) believes that many taxa described as species of *Tillandsia* are actually hybrids. In Brazil, only one natural hybrid (*T. \times* *donatoi* Leme) was previously described (Leme, 1987). The putative hybrid nature of *T. \times* *baptistana* is supported by the absence of viable seeds and by

morphological characters intermediate between the two presumed parent taxa. Its phenology is also similar to *T. recurvata* and *T. mallemonitii*.

Two individuals of *Tillandsia \times* *baptistana* were found as epiphytes on fig trees. One other was found on a fallen branch. Only this last individual was collected and partially vouchered. Another part of this plant was cultivated, and its mature capsules were collected to test the seed germination. The plant was maintained on the branch where it was found to avoid damage. The locale where this individual was cultivated is only 3.5 km from the site collection and has the same climate. Mature capsules from the



Table 1. Vegetative and floral measurements (in mm) and characteristics of *Tillandsia recurvata*, *T. ×baptistana*, and *T. mallemontii* from Rio Grande do Sul.

	<i>T. recurvata</i>	<i>T. ×baptistana</i>	<i>T. mallemontii</i>
Total plant length	70–135	160–200	140–270
Leaf length	20–90	30–90	30–95
Sepal length	8.6–7.9	10.4–12	13.4–15.3
Sepal width	3–3.1	3.6–4.1	4–5.1
Petal shape	sublinear to lanceolate	oar-shaped	oar-shaped
Petal color	white to pale blue	pale blue	blue to violet
Petal length	8–10.4	14.8–15.3	19–22.5
Petal width	1.6–2	4.1–5	8–10.5
Stamen length	3.9–5	4.1–6.8	6.1–6.8
Anther length	0.8–1.2	1.2–2.1	2.1–2.3
Ovary length	2.8–4.5	3.8–4.1	5–6
Pistil length	0.9–1.3	1–1.3	1.8–2.2

other two individuals were also collected. A total of 15 capsules were open and 11 were empty. Four capsules had only imperfectly developed seeds that failed to germinate. Other capsules observed in the cultivated plant were also empty. It is important to note that individuals of *T. recurvata* and *T. mallemontii* were also cultivated at the same locale, side by side with *T. ×baptistana*, and they presented many viable seeds.

Gonçalves and Waechter (2002) found nine *Tillandsia* species on isolated fig trees near the area where *T. ×baptistana* was found, including species of the subgenera *Anoplophytum* (Beer) Baker (*T. aeranthis* (Loiseleur) L. B. Smith, *T. gardneri* Lindley, *T. geminiflora* Brongniart, *T. stricta* Solander, and *T. tenuifolia* L. var. *surinamensis* (Mez) L. B. Smith), *Diaphoranthema* (Beer) Baker (*T. recurvata*, *T. tricholepis* Baker, and *T. usneoides* (L.) L.), and *Phytarrhiza* (Visiani) Baker (*T. mallemontii*). Only one other *Tillandsia* species (*T. crocata* (E. Morren) Baker of subgenus *Phytarrhiza*) was found in the forests of the same area (C. N. Gonçalves & C. F. de Azevêdo-Gonçalves, unpublished data).

The species belonging to subgenus *Anoplophytum*, as well as *Tillandsia usneoides* and *T. tricholepis*, are morphologically quite different from *T. ×baptistana* and may be promptly excluded as its parents. Although *T. crocata* occurs in the same geographic area and shares some morphological (leaves distichous-ranked, stem elongated) and floral characters (oar-shaped petals) with *T. ×baptistana*, it is rare and was not found in the immediate area where *T. ×baptistana* occurs. On the other hand, *T. recurvata* and *T. mallemontii* are extremely common in this area, especially the former species, and both were found growing with *T. ×baptistana* in the same trees. Of these three taxa, *T. recurvata* is the smallest. The maximum size of this species is 13.5 cm in the coastal plain of Rio Grande do Sul (to 23 cm in its whole occurrence area, according to Smith & Downs, 1977). However, it normally has an elongated stem and

distichous-ranked leaves similar in aspect and dimensions to young individuals of *T. ×baptistana* and *T. mallemontii*. It is therefore somewhat difficult to distinguish one from another when they lack flowers. *Tillandsia ×baptistana* is very similar to *T. mallemontii* vegetatively, although individuals of *T. mallemontii* may have a more elongated stem (Table 1). The majority of the floral characters (sepals, stamens, anthers, and ovaries) of the three taxa are also similar in shape and form, but differ in size. Only the petals have a remarkable difference in shape: *T. recurvata* has sublinear to lanceolate petals and *T. mallemontii* has oar-shaped petals. In *T. ×baptistana*, the petals are also oar-shaped, but somewhat less defined than in *T. mallemontii*. The size of both the petals and sepals in *T. ×baptistana* is intermediate between *T. recurvata* and *T. mallemontii* (Fig. 2). The size of the stamens, ovaries, and pistils in *T. ×baptistana* overlaps the upper size range of these characters in *T. recurvata* (Table 1). The anthers of *T. recurvata* and *T. ×baptistana* are of equal size or slightly larger in *T. ×baptistana*, but are always smaller than in *T. mallemontii*.

Studies on floral biology and pollination, as well as species compatibility, are still lacking for *Tillandsia recurvata* and *T. mallemontii*. However, these two species flower in late spring to early summer (December to January) in the coastal plain of Rio Grande do Sul. Frequently, individuals of both species are found flowering at the same time in the same tree. So, it is not surprising that hybridization occurs between them. *Tillandsia ×baptistana* flowers at the same time, normally in December, but some flowers may occur occasionally in March or April.

*Tillandsia ×baptistana* is the first putative natural hybrid for species of *Tillandsia* from two different subgenera: *Phytarrhiza* (*T. mallemontii*) and *Diaphoranthema* (*T. recurvata*). It is possible that these two species will be better classified together (in a unique subgenus). Only future phylogenetic work in *Tilland-*



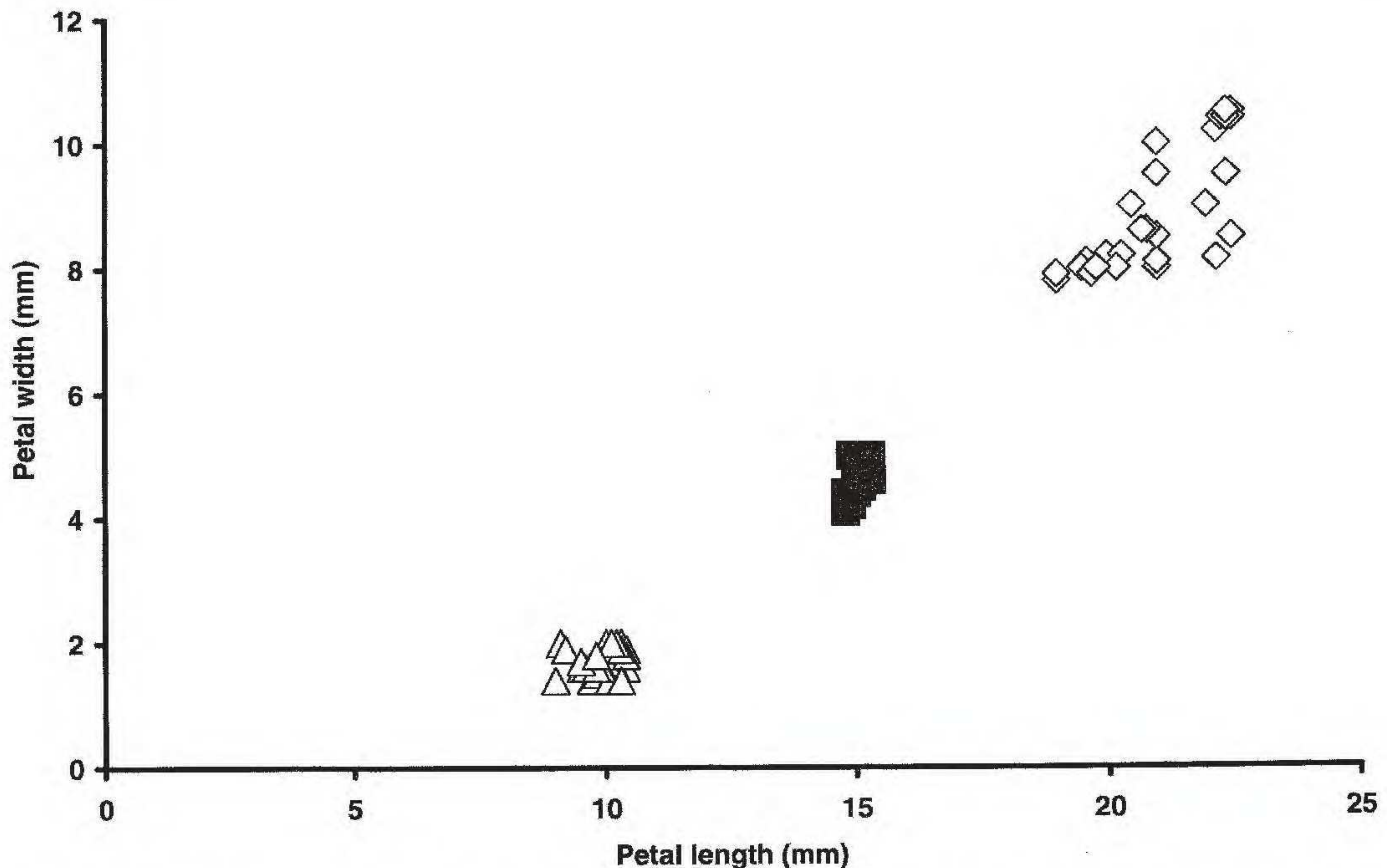


Figure 2. Comparison between petal length and width of *Tillandsia recurvata* (triangles,  $n = 30$  flowers sampled), *T. ×baptistana* (filled squares,  $n = 15$ ), and *T. mallemonitii* (diamonds,  $n = 30$ ).

*sia* (including these two species) will resolve this question appropriately.

Following is a key to identify *Tillandsia ×baptistana*, *T. recurvata*, and *T. mallemonitii* from Rio Grande do Sul, Brazil:

- 1a. Flowers inconspicuous; petals 8–10.4 mm long, white to pale blue; stamens 3.9–5 mm long; anthers 0.8–1.2 mm long; ovaries 2.8–4.5 mm long; pistils 0.9–1.3 mm long . . . . . *T. recurvata*
- 1b. Flowers larger.
  - 2a. Petals 14.8–15.3 mm long, pale blue; stamens 4.1–6.8 mm long; anthers 1.2–2.1 mm long; ovaries 3.8–4.1 mm long; pistils 1–1.3 mm long . . . . . *T. ×baptistana*
  - 2b. Petals 19–22.5 mm long, blue to violet; stamens 6.1–6.8 mm long; anthers 2.1–2.3 mm long; ovaries 5–6 mm long; pistils 1.8–2.2 mm long. . . . . *T. mallemonitii*

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